# HR-380 Maturity & Pulse Velocity Measurements for PCC Traffic Opening Decisions

**Key Words: PCC, Concrete Maturity, Traffic Opening, Concrete Strength, Pulse Velocity, Traffic Delays,**

## ABSTRACT

Concrete paving is often at a disadvantage in terms of pavement type selection due to the time of curing required prior to opening the pavement to traffic. The State of Iowa has been able to reduce traffic delay constraints through material selection and construction methods to date. Methods for monitoring concrete strength gain and quality have not changed since the first concrete pavements were constructed in Iowa. In 1995, Lee County and the Iowa DOT cooperated in a research project, HR-380, to construct a 7.1 mile (11.43 km) project to evaluate the use of maturity and pulse velocity nondestructive testing (NDT) methods in the estimation of concrete strength gain.

The research identified the pros and cons of each method and suggested an instructional memorandum to utilize maturity measurements to meet traffic delay demands. Maturity was used to reduce the traffic delay opening time from 5-7 days to less than 2 days through the implementation of maturity measurements and special traffic control measures. Recommendations on the development of the maturity curve for each project and the location and monitoring of the maturity thermocouples are included. Examples of equipment that could easily be used by project personnel to estimate the concrete strength using the maturity methods are described.